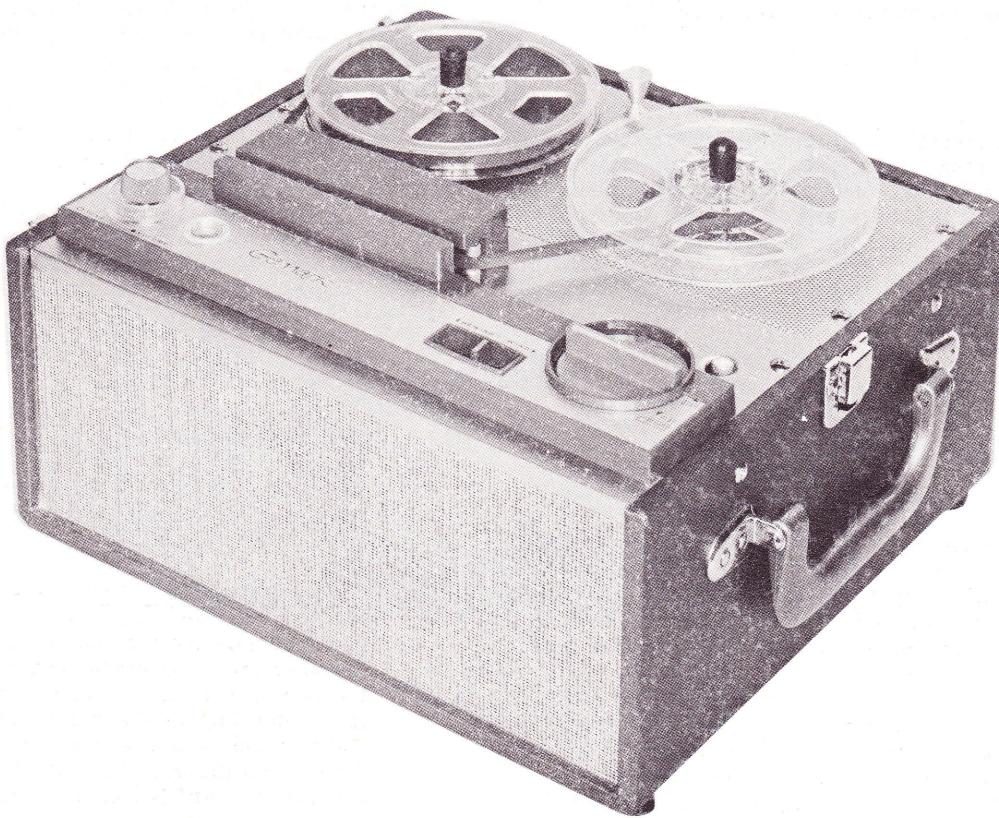


PHOTOFACT® Folder

with CIRCUITTRACE*

GEMARK
MODEL 101GEMARK
MODEL 101GEMARK
MODEL 101

GENERAL INFORMATION

The Gemark Model 101 tape recorder is a two-speed tape recorder designed to play and record two tracks of material on standard-width recording tape.

Recordings may be made from a phonograph, radio, or television receiver as well as those made from the microphone.

The two tape speeds are 7 1/2 and 3 3/4 ips. Using both tracks, the recording and playing times are as follows:

Reel Size	3 3/4" Speed	7 1/2" Speed
5" (600 ft.)	1 hour	1/2 hour

This recorder is designed to operate on 60 cycles, 110-120 volts, AC supply only.

Manufactured By:

General Magnetics & Electronics, Inc.
134-09 36th Road
Flushing 54, New York

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guarantee by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of CQ459

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FUNCTION OF CONTROLS

On-Off Volume

Turn this control clockwise to turn the power on to the unit. Further rotation increases the volume on playback and the recording level on record.

Function

This control selects the different modes of operation. Turning this control clockwise from the Stop position places the unit in the Playback mode. To place the unit in the Record mode, depress the Function control and turn it clockwise until it locks into position.

Wind-Rewind

Move this control to the right to wind the tape onto the takeup reel and to the left to rewind the tape onto the supply reel. Before operating this control, make sure the Function control is in the Stop position.

Speed Change

To change the recorder speed to 3 3/4 ips, pull up on the control. Pushing down on the control changes the speed to 7 1/2 ips.

NOTE: This control should be operated only when the recorder is turned on.

OPERATING INSTRUCTIONS

Threading the Tape

1. Place a reel of tape on supply reel spindle (18).
2. Place an empty reel on takeup reel spindle (3).
3. Unwind about 12" of tape from the reel. Hold a section taut and insert it into the tape slot. Make sure the dull-coated side faces the rear of the recorder.
4. Insert the free end of the tape into one of the radial slots in the hub of the takeup reel. Turn the reel several turns counterclockwise to secure the tape to the reel and to take up all slack between reels.

To Record from Microphone

1. Turn the unit on and allow sufficient time for the tubes to warm up.
2. Insert the microphone into the microphone jack.
3. Set the Speed Selector for the desired recording speed.
4. Move the Function Control to the Record position.
5. Place the microphone about 6 to 12 inches from the signal source.
6. Adjust the Volume control until the record level indicator flashes on the loudest peaks.

NOTE: Correct volume level when recording is very important. Too weak a signal will result in weak playback and high background noise. Too strong a signal will result in distortion during playback.

To Record from a Radio

To record from a radio, one of the following methods may be used:

1. Microphone Pickup from Radio Speaker. — Place the microphone about 6 to 12 inches in

front of the radio speaker. Turn the radio volume control to a normal level. Turn the radio tone control to treble or high. Set the recording level and record as under "To Record from a Microphone".

2. Direct Connection to Radio Speaker. — Make a shielded cable with a two-conductor phono plug on one end and two alligator clips on the other end. Connect the alligator clips across the voice coil terminals of the radio speaker and insert the plug into the microphone jack. Set the radio volume and tone controls as described in Step 1. Set the recording level and proceed as described under "To Record from a Microphone".
3. Direct Connection to Volume Control of Radio. — Make a shielded cable with a phono plug on one end. Connect the other end across the radio volume control. Insert the phono plug in the microphone jack. Set the recording level and record as described under "To Record from a Microphone". The setting of the radio volume and tone controls will have no effect on this setup.

To Record from Phonograph

A phono plug is required on the pickup leads of the phonograph. Insert it into the microphone jack and proceed as described under "To Record from a Microphone".

To Record from a Television Receiver

Use one of the methods described under "Recording from a Radio".

Dual Track Recording

This recorder is designed to record and play on one-half the width of the tape at a time; thereby, resulting in two-track recording. After the first recording is completed, remove the full reel from the takeup reel spindle (3), turn the reel over and place it on the supply reel spindle (18). The second track can now be recorded. The tape can be played back in the same manner.

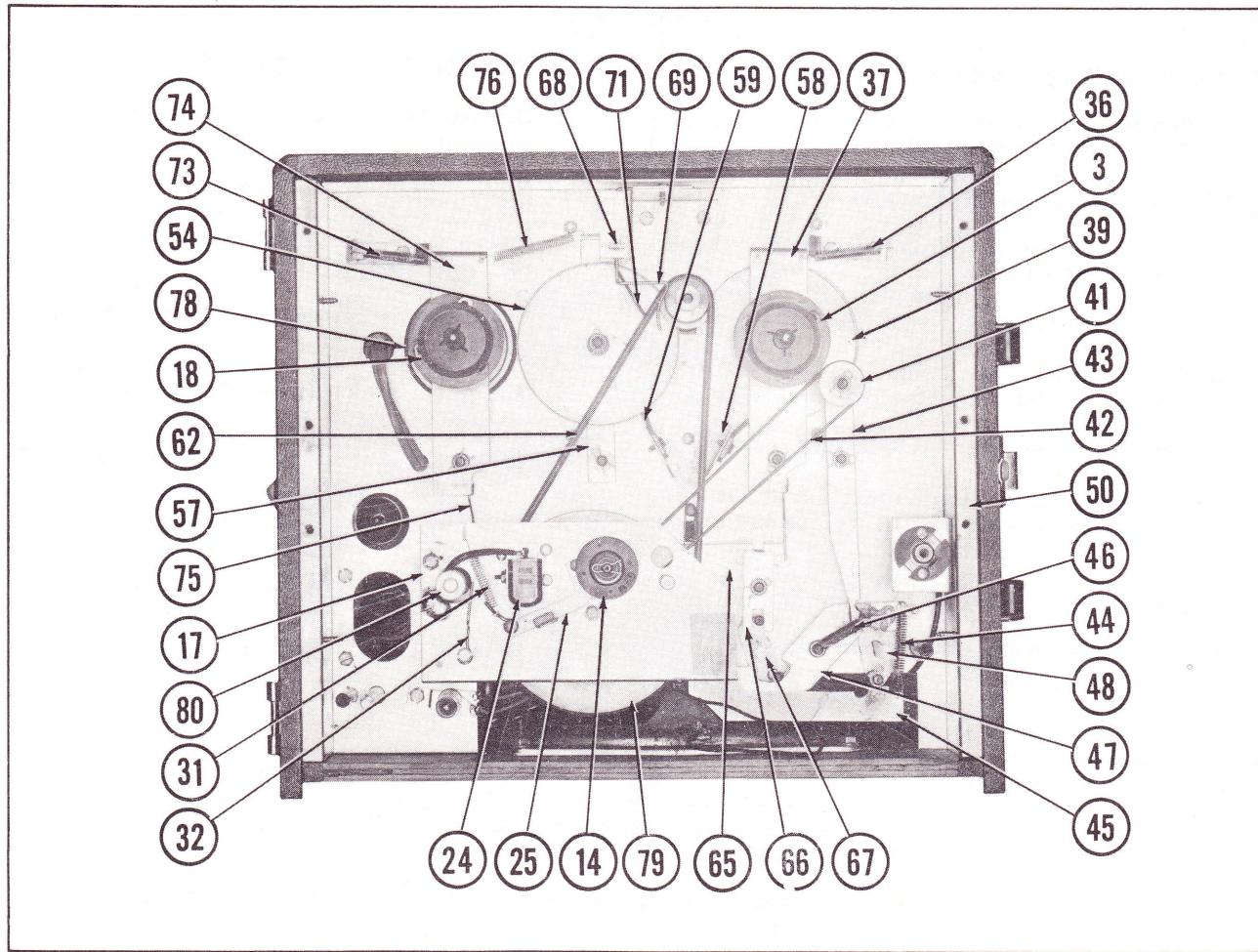


FIG.1 TOP VIEW OF MECHANISM WITH DRESS PLATE REMOVED

Rewind

To rewind the tape at a rapid speed, move the Wind-Rewind control to the left, holding it in this position until the tape is rewound.

Fast Forward

To wind the tape forward at a rapid speed, move the Wind-Rewind control to the right, holding it in this position until the tape is wound to the desired place.

To Play a Recording

1. Thread the tape as described under "Threading the Tape".
2. Turn the Function Selector to the Play position.
3. Adjust the Volume control to the desired listening level.

To Erase a Recording

Any recording on the tape is automatically erased

before a new recording is made with the unit in Record. Should it be desired to erase a recording without re-recording new material, follow the normal recording procedure but set the Volume control fully counter-clockwise and leave the microphone disconnected.

To Edit and Splice Tape

NOTE: It is impossible to edit and splice one track of a two-track recording without affecting the other. Recordings to be edited should be limited to one-track recordings only.

1. Tape may be edited by cutting out unwanted portions or by joining selections into another sequence. Announcements can be inserted between selections, etc. Unused tape can be spliced for reuse.
2. For best results, cut tape at a slight diagonal, butt ends together and fasten on the glossy side with splicing tape. Trim off any excess width.

CLEANING

The tape guides, erase head, record-playback head, pressure roller, and capstan should be cleaned

with a soft, lint-free cloth dipped in alcohol to remove tape residue from these parts.

DISASSEMBLY

To Remove Recorder from the Case

1. Remove Function control (9), On-Off Volume (27), and Tone control (28) knobs.
2. Remove reel spindle covers (1).
3. Remove two screws from escutcheon (11) and remove escutcheon.
4. Remove Speed Selector knob (19).
5. Remove two screws from head cover plate (8) and four screws from the dress plate (7).
6. Remove four screws, two from each end of case.
7. Lift the unit up and away from the case and remove the four nuts holding the speaker to the case.
8. Lift entire unit from case.
9. Reverse above procedure to reassemble.

To Remove Amplifier from Tape Transport

1. Remove the bracket holding the record level indicator.
2. Disconnect the motor leads.
3. Disconnect the record-playback head wires from the printed board.
4. Loosen set screw holding lever to switch on printed board.
5. Disconnect line cord from On-Off switch.
6. Remove power transformer from motor mounting plate (88).
7. Remove three screws holding printed board to chassis brackets.
8. Reverse the above procedure to reassemble.

TROUBLE CHART

Symptom	Cause	Remedy
No Record or Playback	1. Drive belt (42) or (62) off or broken. 2. Tension spring (31) disconnected or broken. 3. Defective record-playback head (24). 4. Defective motor (91).	1. Replace drive belt. 2. Replace tension spring. 3. Replace head. 4. Replace motor.
No Rewind	1. Rewind idler (78) loose on shaft. 2. Actuating spring (75) bent or broken. 3. Spring (76) unhooked or broken.	1. Tighten set screw on idler. 2. Straighten or replace spring. 3. Replace spring.
No Erase	1. Erase head (80) turned on shaft. 2. Slide lever (84) unhooked from switch operating slide (85).	1. Straighten erase head. 2. Connect slide lever.
Reel Spindles slip	1. Grease on drive wheels.	1. Clean drive wheels.

MECHANICAL PARTS LIST

Ref. No.	Description	Ref. No.	Description
1	Reel Spindle Cover	9	Function Control Knob
2	Reel Hold Down	10	Screw
3	Takeup Reel Spindle	11	Escutcheon
4	Felt Washer	12	Trim Strip
5	Clutch	13	Wind-Rewind Knob
6	Screw	14	Pressure Roller
7	Dress Plate	15	Screw
8	Head Cover Plate	16	Tape Guide

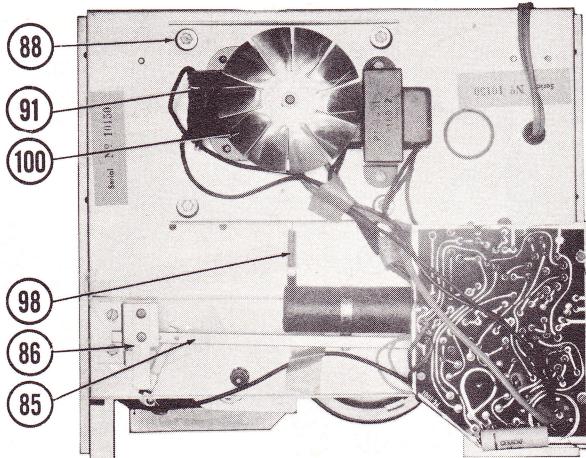


FIG.2 BOTTOM VIEW OF MECHANISM

MECHANICAL PARTS LIST (CON'T.)

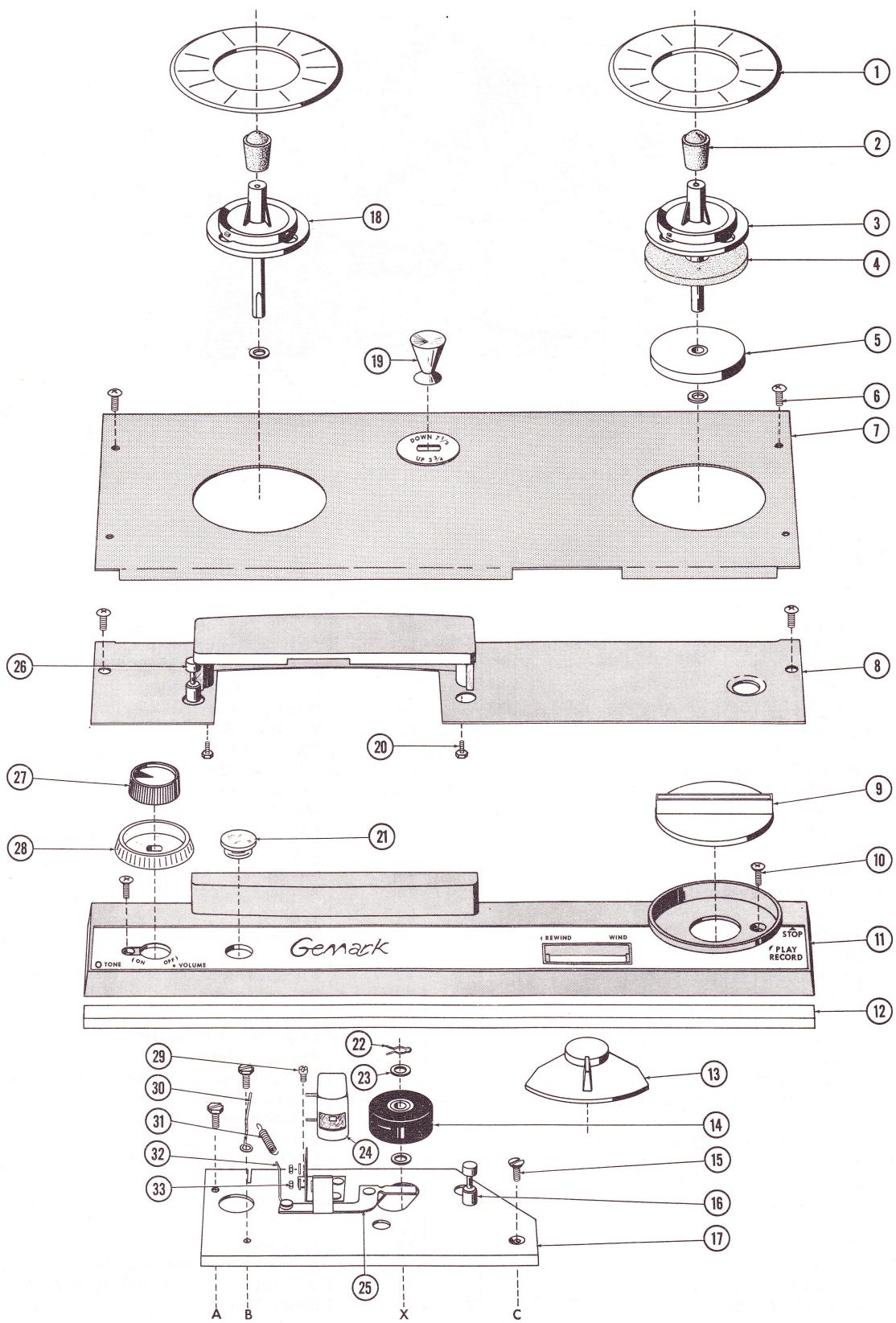
Ref. No.	Description	Ref. No.	Description
17	Head Mounting Plate	59	Brake Shoe
18	Supply Reel Spindle	60	Brake Shoe Cap
19	Speed Selector Knob	61	Connecting Link
20	Screw	62*	*Flywheel Drive Belt
21	Jewel	63	Part of Item 45
22	Hairpin Clip	64	Bushing
23	Washer	65	Wind-Rewind Slide
24	Record-Playback Head	66	Wind-Rewind Slide Actuating Lever
25	Pressure Pad Assembly	67	Wind-Rewind Control
26	Tape Guide	68	Speed Shift Plunger
27	On-Off Volume Knob	69	7 1/2 ips Belt Shifter
28	Tone Knob	70	Compression Spring
29	Screw	71	3 3/4 ips Belt Shifter
30	Tape Guide	72	Speed Nut
31	Spring	73	Spring
32	Part of Item 25	74	Supply Reel Spindle Mounting Plate
33	Head Mounting Nut	75	Actuating Spring
34	Screw	76	Spring
35	Bracket	77	Bushing
36	Spring	78	Rewind Idler
37	Takeup Reel Mounting Plate	79	Flywheel and Capstan Assembly
38	Speed Nut	80	Erase Head
39	Takeup Idler Wheel	81	Grip Ring
40	Hairpin Clip	82	Fish Paper Insulation
41	Pulley	83	Support Plate
42*	*Takeup Drive Belt	84	Switch Operating Slide Lever
43	Takeup Drive Idler Bracket	85	Switch Operating Slide
44	Spring	86	Switch Operating Slide Stop
45	Pressure Roller Actuating Lever	87	Screw
46	Spring	88	Motor Mounting Plate
47	Brake Operating Lever	89	Grommet
48	Function Control	90	Spacer
49	Spring	91	Motor
50	Motor Board Assembly	92	Bushing
51	Screw	93	Erase Head Mounting Shaft
52	Speed Shift Clip	94	Printed Circuit Mounting Bracket
53	Mounting Bracket	95	Shock Mount
54	Rewind Idler	96	Washer
55	Washer	97	Screw
56	Set Screw	98	Tension Spring
57	Rewind Idler Mounting Bracket	99	Set Screw
58	Brake Plate	100	Fan

* Takeup Drive Belt-
WALSCO Part #1410-12.

* Flywheel Drive Belt -
WALSCO Part #1410-15.

**GEMARK
MODEL 101**

FOLDER 8



A PHOTOFAC "EXPLODED" VIEW
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FIG.3A EXPLODED VIEW OF PARTS ABOVE HEAD MOUNTING PLATE

**GEMARK
MODEL 101**

FOLDER 8

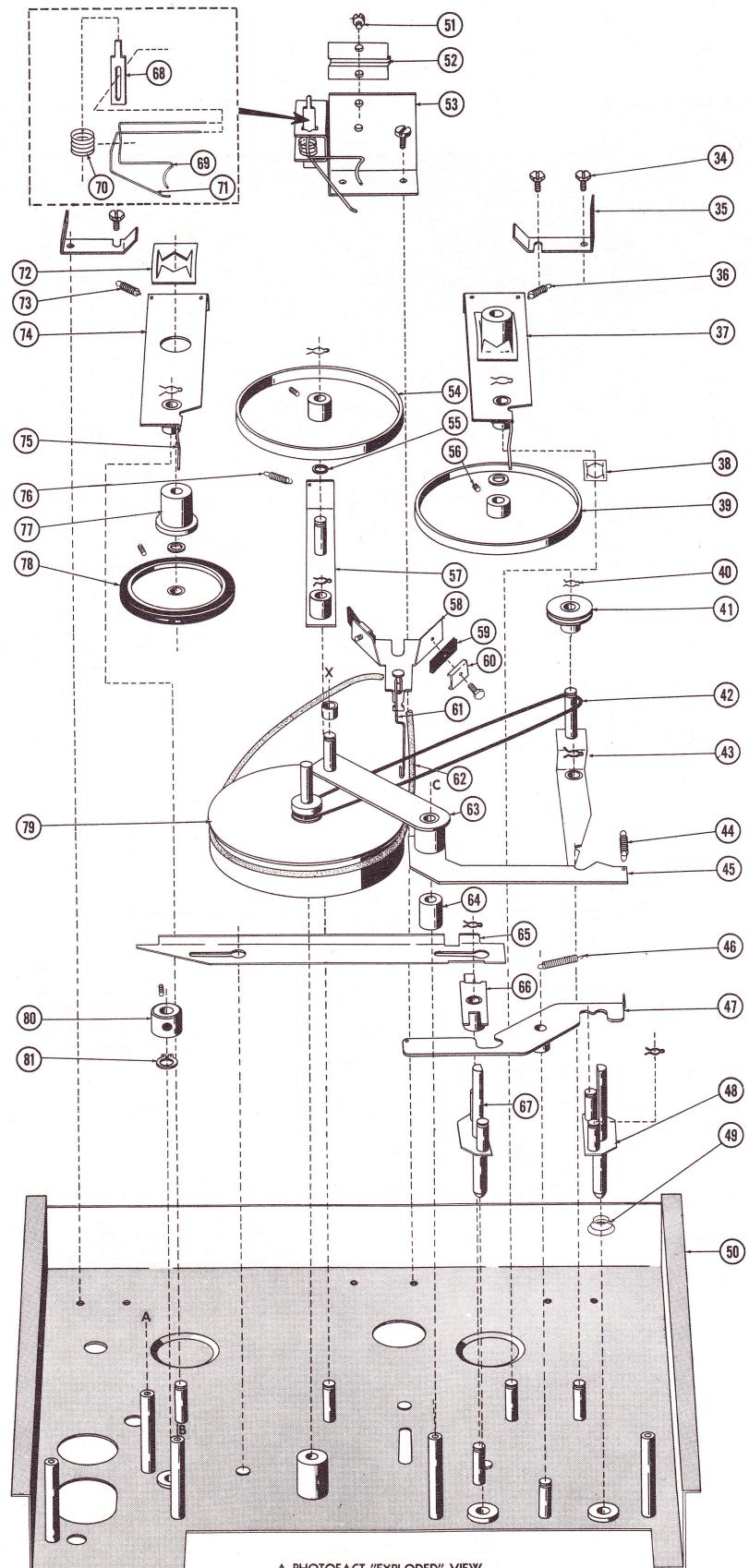


FIG.3B EXPLODED VIEW OF PARTS ABOVE MOTOR BOARD

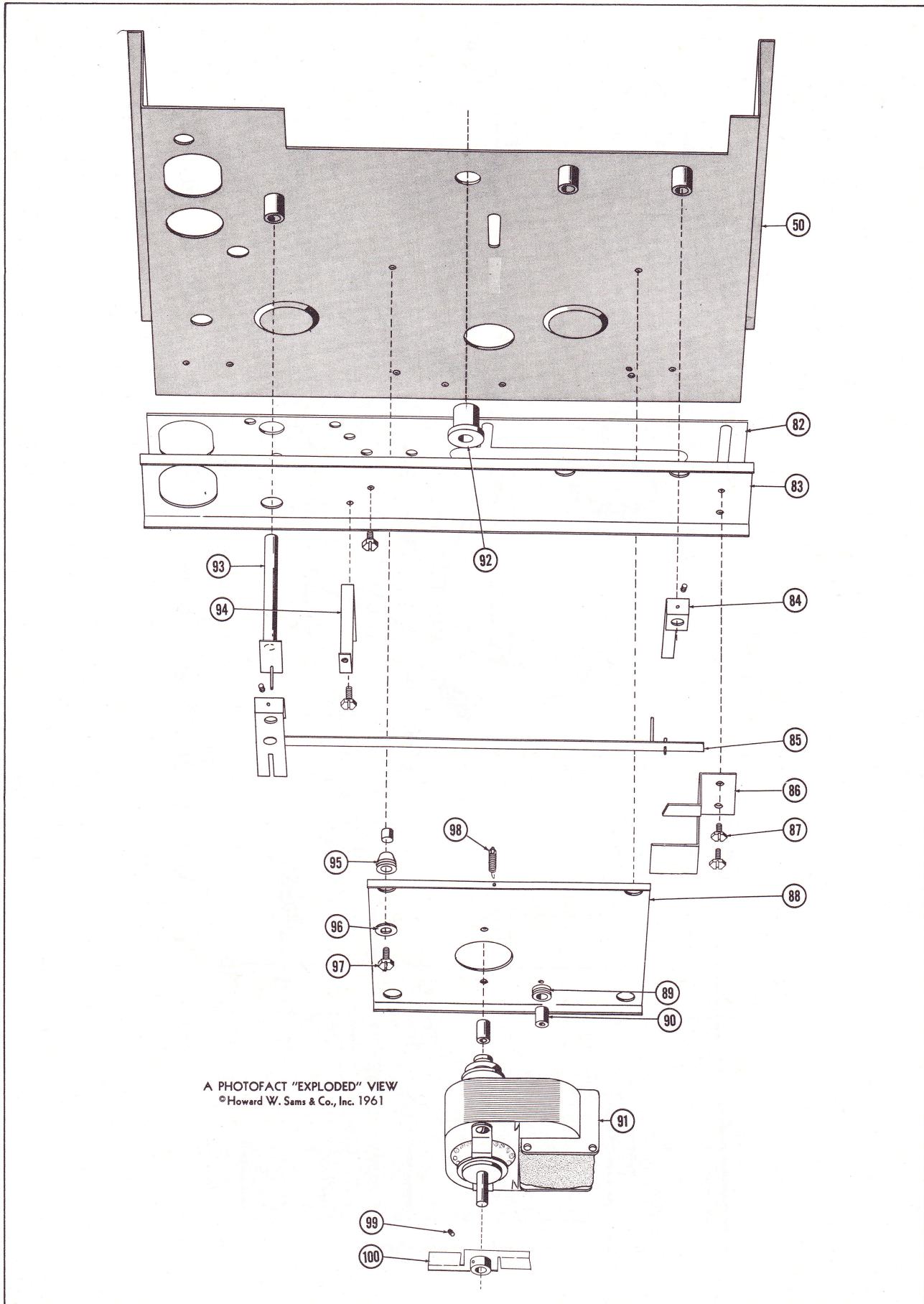
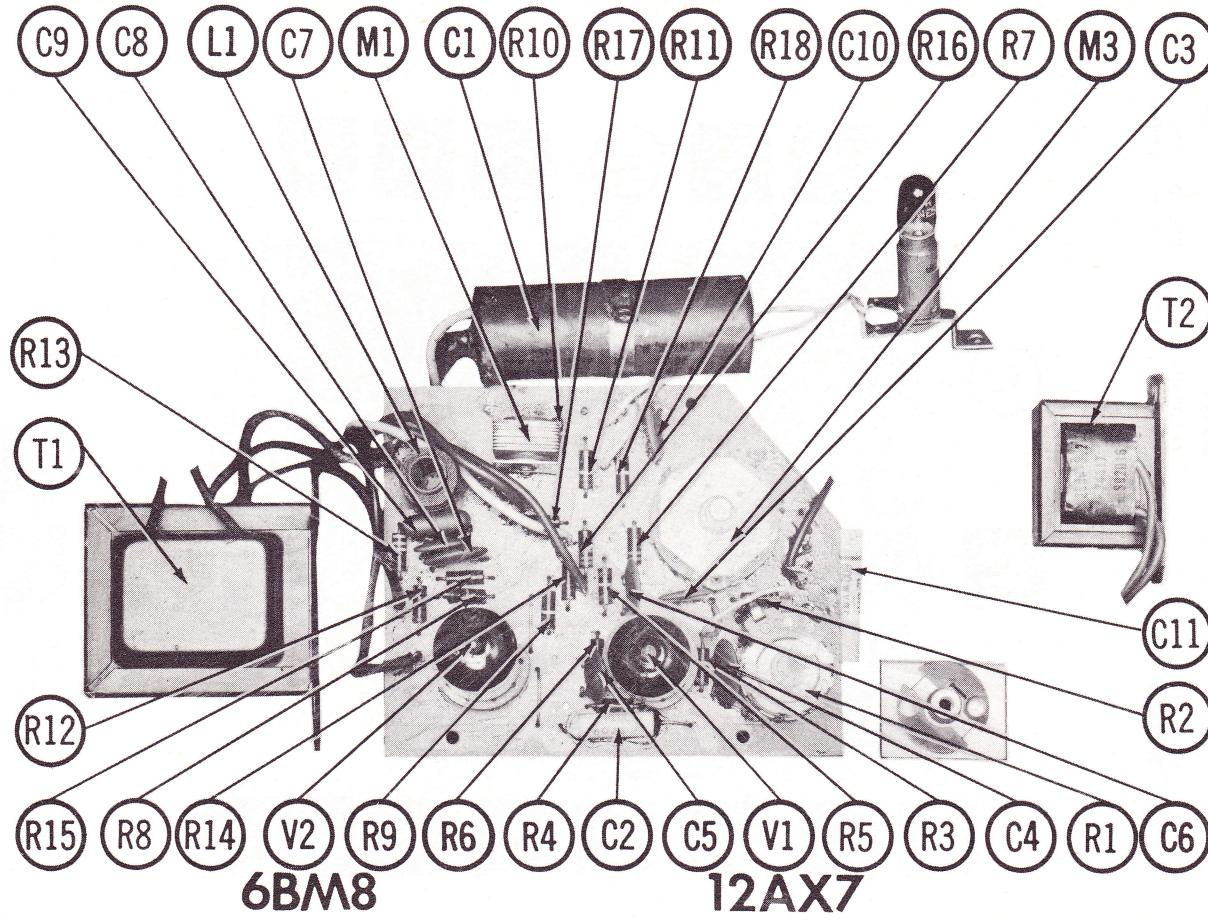


FIG.3C EXPLODED VIEW OF PARTS BELOW MOTOR BOARD

ELECT. PARTS LIST AND DESCRIPTIONS

AMP CHASSIS—TOP VIEW

GENERAL ELECTRIC				RAYTHEON				SYLVANIA			
ITEM No.	USE	TYPE	PART No.	ITEM No.	USE	TYPE	PART No.				
V1	Preamplifier	12AX7		V2	AF Amp.—Bias Osc. -	6BM8					
					Output						



ELECTROLYTIC CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	REPLACEMENT DATA			
				CENTRALAB DUBLINER PART No.	MALLORY PART No.	PYRAMID PART No.	SRAIGUE PART No.
C3	20000		BPD-02	DD-203	BYBBS2	CDD-203	B-120
C4	10000		BPD-01	DD-103	BYAUS2	CDD-103	5HK-S20
C5	20000		BPD-02	DD-203	BYBBS2	CDD-203	5HK-S20
C6	20000		BPD-02	DD-203	BYBBS2	CDD-203	5HK-S20
C7	10000		BPD-01	DD-103	BYAUS2	CDD-103	5HK-S10
C8	3000	.003 300V	DI-3000	DD-302	BYAUS2	CDD-302	GP230
C9	.50	10%	P488N-003	D6-302	DIQBS2	6DP-1302	GEM-623
C10	.02	600V	DI-50	DD-500	LQ0QS2	CDD-500	GP450
CL1			P488N-02	DD-203	CUBBD3	6DP-203	6TMS-Q50
					CUBBS2		6TMS-S20

CONTROLS

ITEM No.	RATING	GEMARK PART No.	CENTRALAB PART No.	REPLACEMENT DATA			
				CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
RIA	15W	101	Fl-26*	Fl-26*	R2-42	KR-1	■ UE 3905-S
B	500K						Tone Volume
C	Switch						Power On-Off

* "STA-LOC" equivalent: FA153L, RU55A, OS2562, IS3000, US41.

* Do not use taps.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R2	3.3meg		R8	10meg		R14	22000	
R3	220K		R9	220K		R15	2200	
R4	22000		R10	100K		R16	33K	
R5	100K		R11	220K		R17	22000	
R6	33000		R12	22000		R18	100K	
R7	3.3meg		R13	470K				

ELECT. PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		GEMARK PART No.	Merit PART No.	Miller PART No.	Stancor PART No.		
L1	Bias Osc.						

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	GEMARK PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .25A	170V @ .040A Tap @ 5.3V @ 9A		PT-1001					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	GEMARK PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	2500Ω	3-4Ω	24A17	A-3025	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	GEMARK PART No.	QUAM PART No.	
SP1	4" x 8"	PM	6-8Ω		48A2Z8	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
		CURRENT (Measured)	GEMARK PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.020A * .040A ♦		①	INI763 ②	2F4 ②	SR200 ②	① Selenium ② Silicon * Measured in Record Position. ♦ Measured in Playback Position.

MISCELLANEOUS

ITEM No.	PART NAME	GEMARK PART No.	NOTES
M2	Head Switch		Record-Playback Function (Rotary Type)
M3			

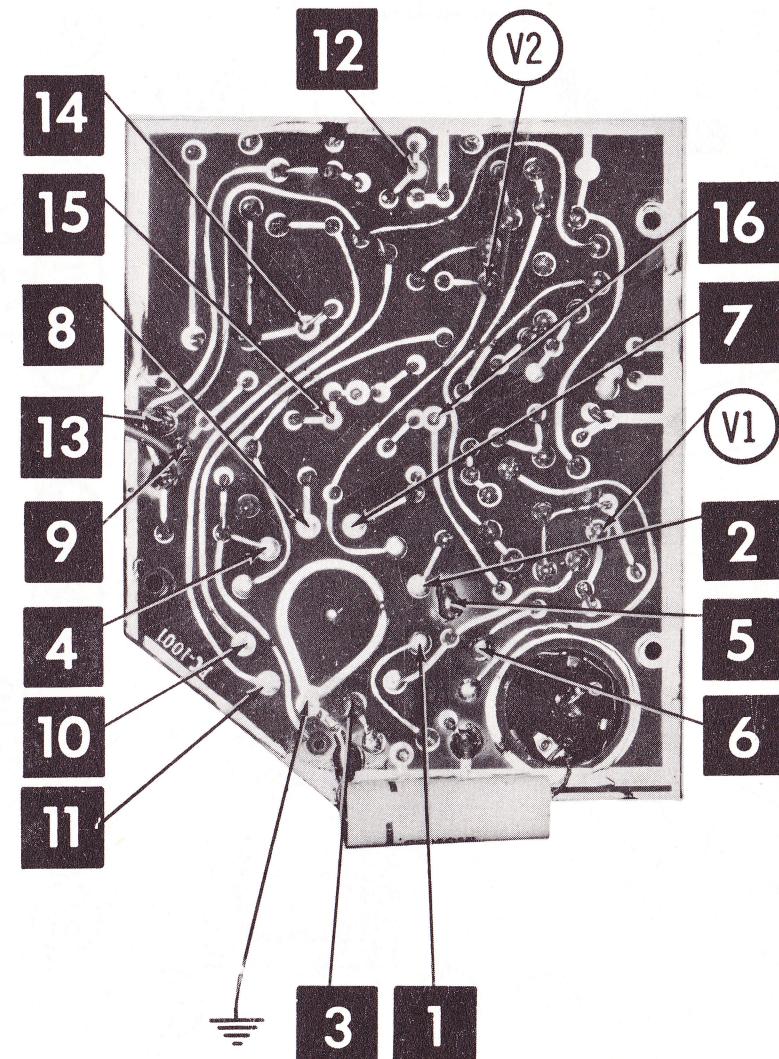
WIRING DATA

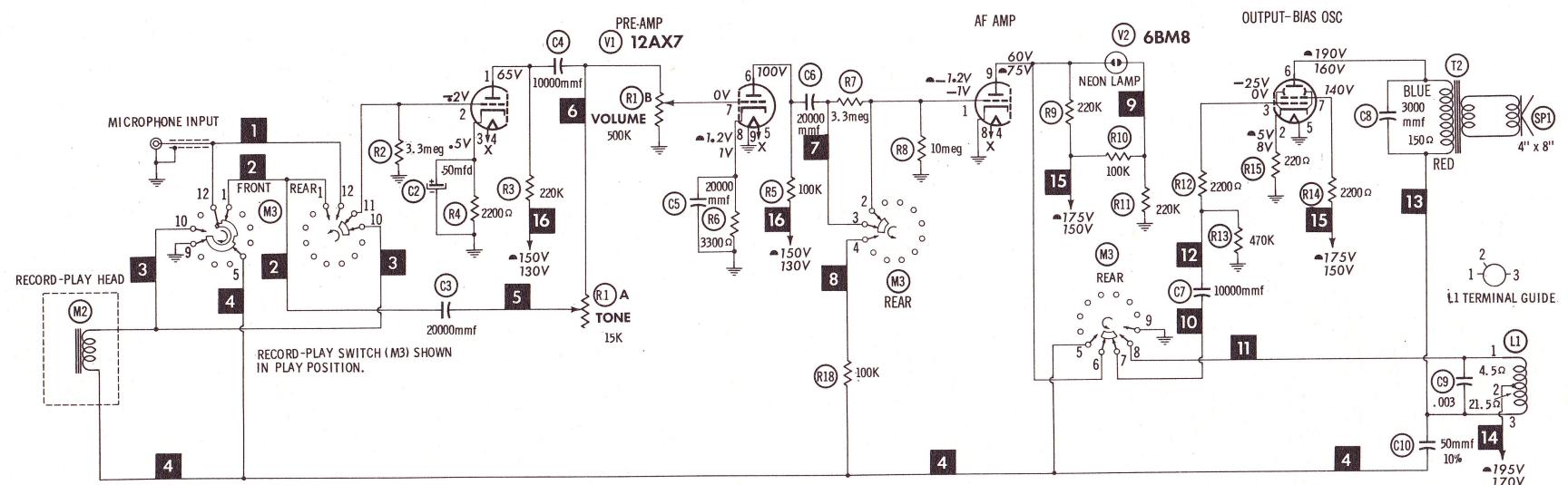
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PRINTED BOARD

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*TRADE MARK

ARROWS INDICATING TUBE LOCATIONS ARE
POINTING TO PIN 1 UNLESS OTHERWISE INDICATED





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	+255K	3.3meg	2200Ω	.1Ω	.1Ω	+135K	0Ω	3300Ω	0Ω
V2	ECL88 6BM8	10meg	220Ω	470K	.1Ω	0Ω	+150Ω	+4400Ω	0Ω	+220K

ALL MEASUREMENTS MADE IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.

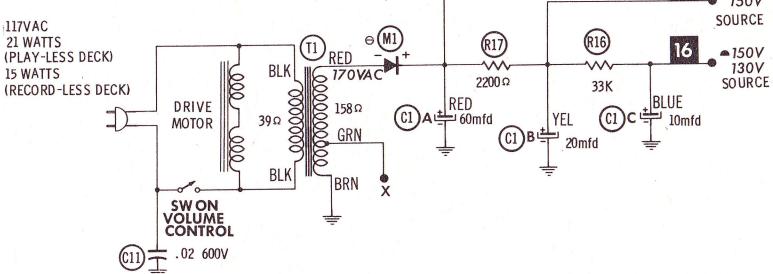
MEASURED IN "RECORD" POSITION.

ALL MEASUREMENTS MADE WITHOUT DECK.

† MEASURED FROM OUTPUT OF M1.

- DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
- Socket connections are shown as bottom views.
- Measured values are from socket pin to common ground.
- Line voltage maintained at 117 volts for voltage readings.
- Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
- All controls at minimum, proper output load connected.

20ma. - RECORD
40ma. - PLAY



A PHOTOFAC STANDARD NOTATION SCHEMATIC
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MODEL 101

FOLDER 8
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